

CLAIMS

What is claimed is:

1. A method for assigning management responsibility to agents for management of
5 manageable entities comprising:
retrieving access data from a repository, the access data enabling an agent to gain
management access to at least one manageable entity;
transmitting a discovery message to an agent, the discovery message including the
access data corresponding to manageable entities accessible by the agent according to a
10 type of the manageable entity;
receiving, from the agent, a manageable entity list message indicative of
manageable entities manageable by the agent based on the access data transmitted to the
agent, the manageable entity list message operable for determining assignment of
management responsibility to the agent for at least one manageable entity of the
15 manageable entities indicated in the manageable entity list message.
2. The method of claim 1 further comprising, prior to retrieving the access data,
storing the access data in the repository, the repository being a secure repository, and the
access data omitted from persistent storage in a local datastore of a computer system
20 operating the agents.
3. The method of claim 1 further comprising building the discovery message based
on the access data.
- 25 4. The method of claim 1 wherein the access data includes access control
information operable to permit access based on the information in the access control
information.
5. The method of claim 1 wherein the access data includes location information
30 operable for locating manageable entities of a storage area network in communication

with the agent, and the determining the primary agent further comprises enabling the agent for discoverable access to the manageable entity.

6. The method of claim 1 further comprising encrypting the access data in the
5 discovery message, the encrypting operable to deter unintended determination of the access data.

7. The method of claim 1 further comprising, prior to retrieving the access data,
receiving an initialization message from at least one of the agents, the initialization
10 message indicative of the readiness of the agent and a type of manageable entity which the agent is operable to manage.

8. The method of claim 1 wherein the access data further comprises enumeration of
discoverable parameters, including at least one of passwords, network address, control
15 parameters and 3rd party software installation paths.

9. The method of claim 1 wherein retrieving from the repository further comprises
querying a component table of the repository to determine access data corresponding to
the type of manageable entities the agent is operable to manage.
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10. The method of claim 9 wherein retrieving from the repository further comprises,
based on the determined access data, for each of the type of configured manageable
entities:

indexing, via the type of the configured manageable entity, into a manageable
25 entity parameter store;

retrieving the access data corresponding to the type of manageable entity; and
generating the discovery message from the retrieved access data.

11. The method of claim 1 wherein the manageable entity list message further comprises, for each of the configured types of manageable entities for which access data was found:

5 an indicator of each of the agents operable to manage the configured manageable entity type.

12. The method of claim 1 wherein storing the access data in the repository further comprises removing the access data from alternate, distributed datastores and consolidating the access data in the repository.

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13. The method of claim 1 further comprising:

receiving, from a user, an indication of a new access data parameter for a manageable entity type;

adding the received access data to the repository;

15 sending discovery messages corresponding to the access data to each of the agents operable to manage the type of manageable entity corresponding to the added access data parameter; and

receiving the manageable entity list corresponding to the sent discovery message, the manageable entity list operable to enable adding the newly added manageable entity
20 to the management correlation, and further operable to enable reprocessing the management correlation, according to agent allocation logic, to select, a particular agent as the primary agent for the newly added manageable entities.

14. The method of claim 13 further comprising receiving the indication of the
25 additional access data via a GUI screen via a GUI application operable to monitor and control the assignment of an agent to a manageable entity.

15. A method for transmitting access data to agents responsible for managing manageable entities comprising:

retrieving access data from a repository, the access data suitable for locating the manageable entities manageable by each of the agents;

transmitting, from the server, discovery information to an agent, the discovery message including access data corresponding to a type of the manageable entities

5 accessible by the agent; and

receiving, from the agent, object information indicative of manageable entities manageable by the agent.

16. A data communications device for assigning management responsibility to agents
10 for management of manageable entities comprising:

an access data manager in a server for retrieving access data from a repository, the access data enabling an agent to gain management access to at least one manageable entity, the access data manager for transmitting a discovery message to an agent, the discovery message including the access data corresponding to manageable entities
15 accessible by the agent according to a type of the entity, the agent responsive to the discovery message for generating a manageable entity list message indicative of manageable entities manageable by the agent based on the access data transmitted to the agent, the manageable entity list message further enabling assignment of management responsibility to the agent for at least one manageable entity of the manageable entities
20 indicated in the manageable entity list message.

17. The data communications device of claim 16 wherein the server is further operable to:

identify, for a particular manageable entity, a set of agents operable to manage the
25 manageable entity; and

determine, from the identified set of agents, a primary agent operable for managing the manageable entity.

18. The data communications device of claim 17 wherein the server is operable to
30 selectively transmit a designate primary agent message from the server to the agent, the

primary agent message indicative of responsibility for managing the manageable entity, and further operable to enable the agent to discover storage characteristics of the manageable entity.

5 19. The data communications device of claim 16 wherein the access data manager is further operable to, prior to retrieving the access data, store the access data in the repository, the repository being a secure repository, and the access data omitted from a local datastore corresponding to the agents.

10 20. The data communications device of claim 16 wherein the access data manager is further operable to build the discovery message based on the access data.

15 21. The data communications device of claim 16 wherein the access data includes access control information operable to permit access based on the information in the access control information.

20 22. The data communications device of claim 16 wherein the access data includes identification information operable for identifying manageable entities in communication with the agent, the access data further operable to enable the agent for discoverable access to the manageable entity.

25 23. The data communications device of claim 16 further comprising encrypting the access data in the discovery message, the encrypting operable to deter unintended determination of the access data.

30 24. The data communications device of claim 16 wherein the access data manager is operable to, prior to retrieving the access data, receive an initialization message from at least one of the agents, the initialization message indicative of the readiness of the agent and a type of manageable entity which the agent is operable to manage.

25. The data communications device of claim 16 wherein the access data further comprises enumeration of discoverable parameters, including at least one of passwords, network address, control parameters and 3rd party software installation paths.

5 26. The data communications device of claim 16 wherein the access data manager is further operable to, prior to retrieving the access data, query a component table of the repository to determine the type of manageable entities the agent is operable to manage.

27. The data communications device of claim 16 wherein the access data manager is
10 further operable to:

index, via the type of the manageable entity, into a manageable entity type
parameter store;

retrieve the access data corresponding to the type of manageable entity; and
generate the discovery message from the retrieved access data.

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28. The data communications device of claim 16 wherein the manageable entity list
message further comprises, for each of the configured manageable entities for which
access data was found:

an indicator of access data operable to enable management contact with the
20 configured manageable entity.

29. The data communications device of claim 18 wherein the access data manager is
operable to:

receive, from a user, an indication of additional access data parameter for a
25 manageable entity type;

add the received access data to the repository;

send discovery messages corresponding to the additional access data to each of
the agents operable to manage the type of manageable entity corresponding to the
additional access data;

receive the manageable entity list corresponding to the sent discovery message, the manageable entity list operable for enabling addition of the newly added access data to a management correlation indicative of each of the agents operable to manage each of the types of configured manageable entities, and further operable for enabling
5 reprocessing of the management correlation, according to agent allocation logic, to select, a particular agent as the primary agent based on the additional access data.

30. The data communications device of claim 29 further comprising a GUI application for receiving the indication of the additional access data, the GUI application
10 operable via a GUI screen to monitor and control the assignment of an agent to a manageable entity.

31. A computerized device comprising:
a display;
15 a memory system;
a processor; and
an interconnection mechanism connecting the display, the processor and the memory system;
wherein the memory system is encoded with a control center application that
20 when performed on the processor, produces at least one control center process that provides a graphical user interface produced on the display of the computerized device, the graphical user interface allowing a user of the computerized device to monitor and control assigning management responsibility to agents for management of manageable entities in a network, the control center processes performing operations comprising:
25 retrieving access data from a repository, the access data enabling an agent to gain management access to at least one manageable entity;
transmitting a discovery message to an agent, the discovery message including the access data corresponding to types of manageable entities accessible by the agent;

receiving, from the agent, a manageable entity list message indicative of manageable entities manageable by the agent based on the access data transmitted to the agent, the manageable entity list message operable for determining assignment of management responsibility to the agent for at least one manageable entity of the manageable entities indicated in the manageable entity list message.

32. A computer program product having a computer readable medium operable to store computer program logic embodied in computer program code encoded thereon for assigning management responsibility to agents for management of manageable entities comprising:

computer program code for retrieving access data from a repository, the access data enabling an agent to gain management access to at least one manageable entity;

computer program code for transmitting a discovery message to an agent, the discovery message including the access data corresponding to types of manageable entities accessible by the agent;

computer program code for receiving, from the agent, a manageable entity list message indicative of manageable entities manageable by the agent based on the access data transmitted to the agent, the manageable entity list message operable for determining assignment of management responsibility to the agent for at least one manageable entity of the manageable entities indicated in the manageable entity list message.

33. A computer data signal for assigning management of manageable entities comprising:

program code for retrieving access data from a repository, the access data enabling an agent to gain management access to at least one manageable entity;

program code for transmitting a discovery message to an agent, the discovery message including the access data corresponding to types of manageable entities accessible by the agent;

program code for receiving, from the agent, a manageable entity list message indicative of manageable entities manageable by the agent based on the access data

transmitted to the agent, the manageable entity list message operable for determining assignment of management responsibility to the agent for at least one manageable entity of the manageable entities indicated in the manageable entity list message.

- 5 34. A data communications device for assigning management responsibility to agents for management of manageable entities comprising:

 means for retrieving access data from a repository, the access data enabling an agent to gain management access to at least one manageable entity;

- means for transmitting a discovery message to an agent, the discovery message
10 including the access data corresponding to types of manageable entities accessible by the agent;

- means for receiving, from the agent, a manageable entity list message indicative of manageable entities manageable by the agent based on the access data transmitted to the agent, and the manageable entity list message operable for determining assignment of
15 management responsibility to the agent for at least one manageable entity of the manageable entities indicated in the manageable entity list message.

35. A method for assigning management responsibility to agents in a storage area network for management of manageable entities, the manageable entities including
20 storage objects, network objects, and database objects comprising:

 identifying security sensitive access data stored in distributed local storage at manageable entities in the storage area network;

 moving the access data from the distributed local storage to a common repository having controlled access via a control center application;

- 25 receiving, from the agents, an indicator of a type of manageable entities operable for management by each of the agents;

 identifying, via the control center application and the repository, a set of manageable entity types operable to be managed by that agent type;

retrieving, via an access data manager in the control center application, the access data from the repository corresponding to the type of manageable entities, the access data enabling an agent to gain management access to at least one manageable entity;

transmitting a discovery message to an agent, the discovery message including the
5 access data corresponding to the types of manageable entities accessible by the agent;

receiving, from each of the agents responsive to the discovery message, a manageable entity list message indicative of manageable entities coupled to the agent and manageable by the agent based on the access data transmitted to the agent, a plurality of the manageable entity list messages further operable in aggregate for generating a
10 management correlation indicative of a set of agents operable to manage each of the identified manageable entities, the management correlation for enabling, based on the generated management correlation and agent allocation logic operable to optimize allocation of agents, assignment of management responsibility to each of the agents for at least one manageable entity of the manageable entities indicated in the plurality of
15 manageable entity list messages.